



INSTRUCTION MANUAL

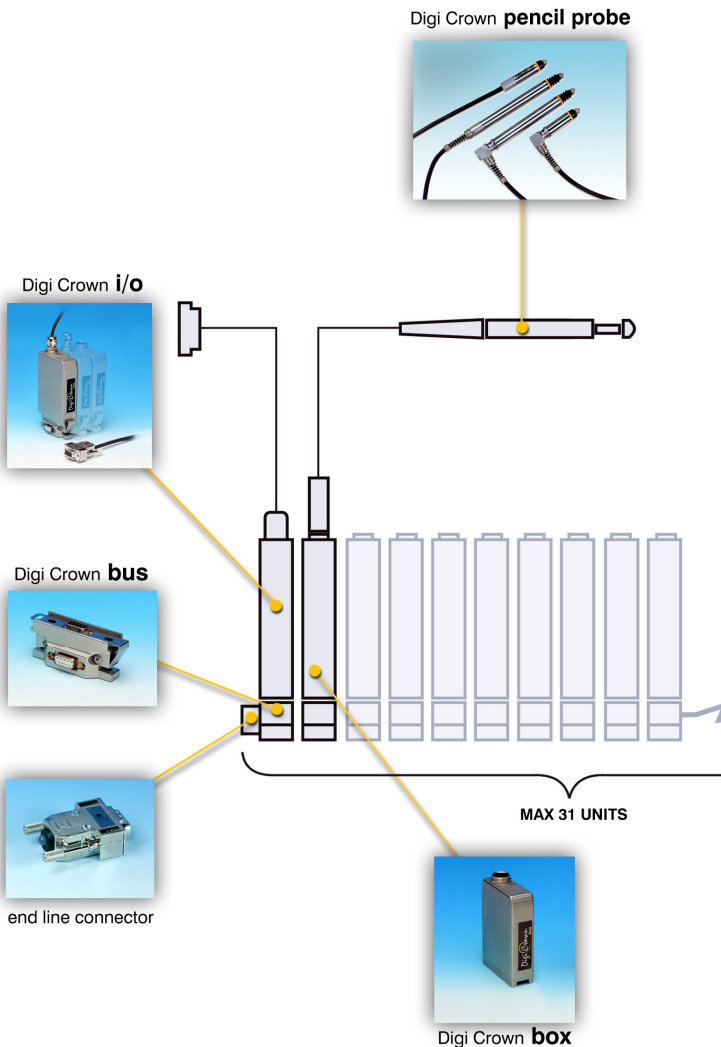


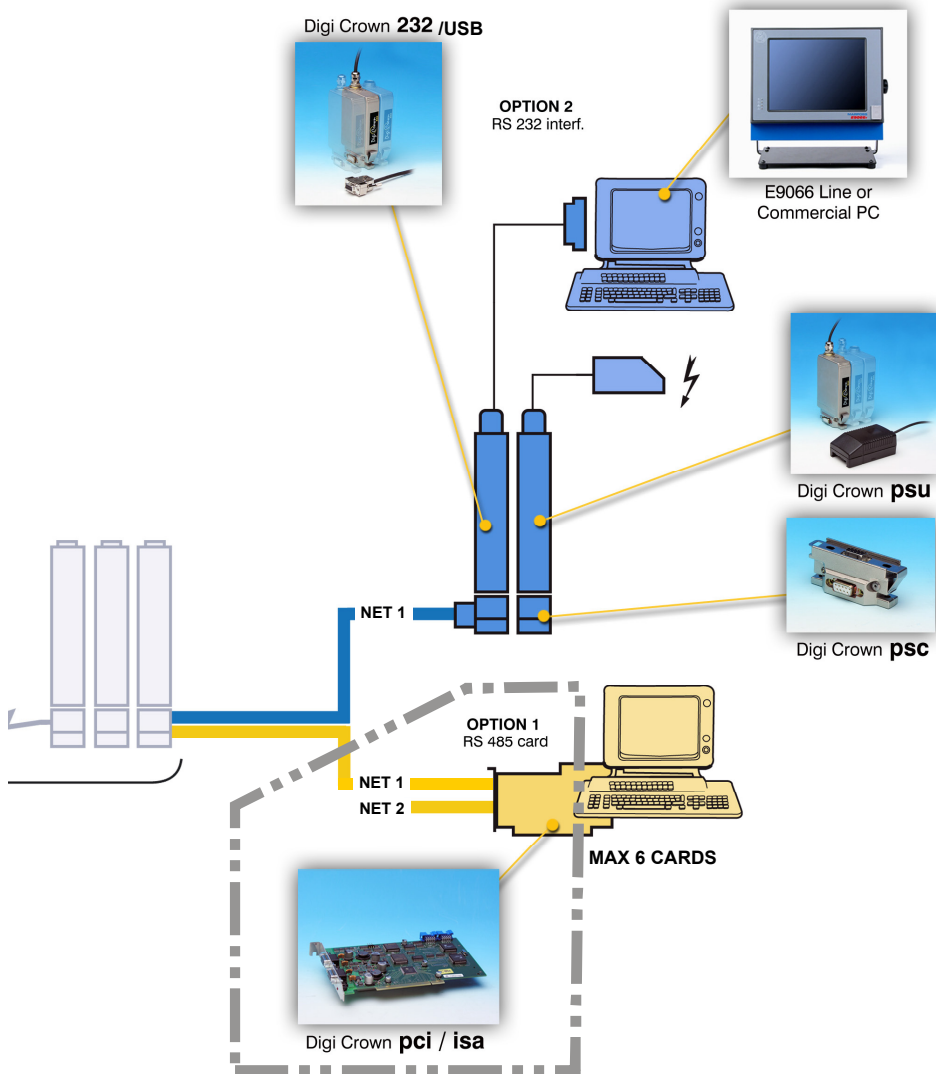
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1. INTRODUCTION TO DIGICROWN PROBING LINE SYSTEM

The *DigiCrown* is a flexible measuring system (from 1 to 372 sensors), configured in networks (from 1 to 12) that can be connected to a PC via an RS232/USB serial interface or dedicated RS485 interface cards for PCI or ISA bus.

The diagram below shows the elements of the *DigiCrown* system in their possible configurations. This user manual follows up the installation of the *DigiCrown pci* unit.





2. PCI CARD



The *DigiCrown pci* unit achieves the RS485 Half Duplex serial communication with the rest of the network. Each card is equipped with two serial ports, for the overall management of 31 + 31 sensors or I/O modules.

Up to 6 cards can be interlinked (see paragraph 3.1), for the management of up to 12 networks (372 active units).

The LEDs next to the serial ports display the operating status of the card (chapter 5).

2.1. Before starting installation...

In order to ensure the correct operation of the *pci* card, a PC with the following minimum specifications is needed:

- One free PCI slot
- Microsoft Windows operating system (Windows 2000, NT, XP)
- 128 MB of RAM
- 700 MHz processor

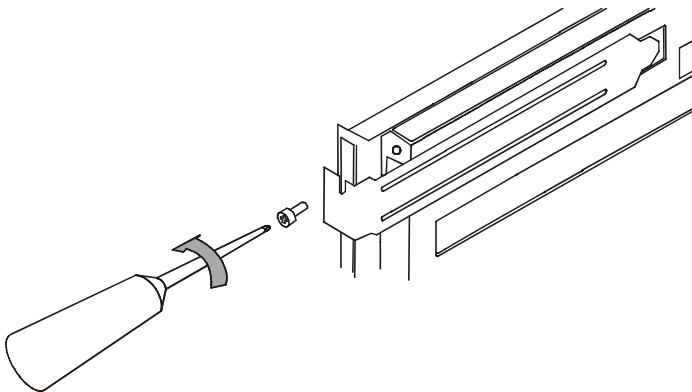
One of the following programs, which can be ordered separately, must be installed in the PC:

- Quick SPC (release 2.2)
- Easy Acquisition (release 2.2)
- Marposs Driver Library

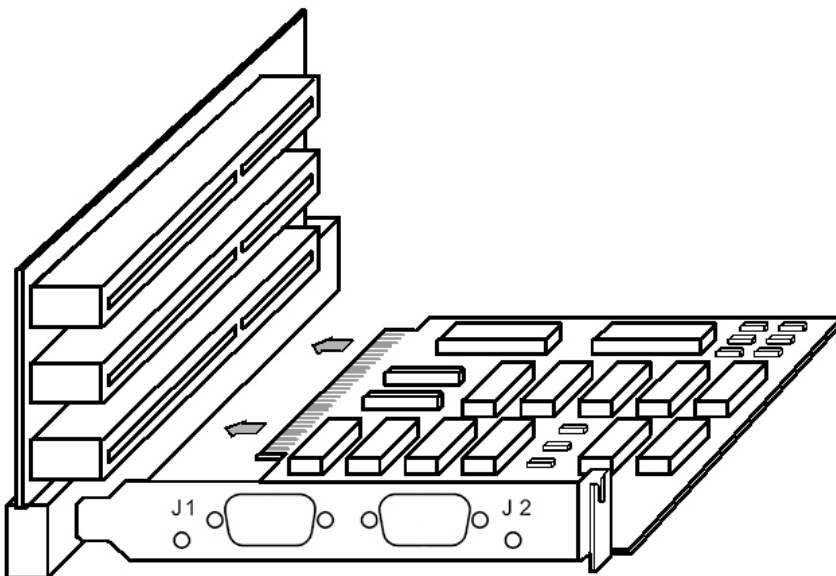
These programs enable the PC to recognize the *pci* card with the system drivers for the installation of the peripheral device.

3. HARDWARE INSTALLATION

To install the *pci* card, switch the computer off, and remove the frame and the metal cover that protects the slot.



Insert the card in a free PCI slot.



3.1. Synchronization of cards

The interlinking of the cards is achieved by means of the OUT-IN connectors (Fig. 1), using the 10-pins flat cable that is supplied (Fig. 2). This series connection, besides extending the configuration of the network to up to 6 **pci** cards (=12 networks), ensures the synchronization of the measurement reference frequencies in the various networks. An “isofrequency” system is thus obtained.

The flat cable must be connected to the OUT connector of a card, which becomes the master one, and to the IN connector of the next card. If further cards are present, the OUT connector is connected to the IN connector of the third one, and so on.

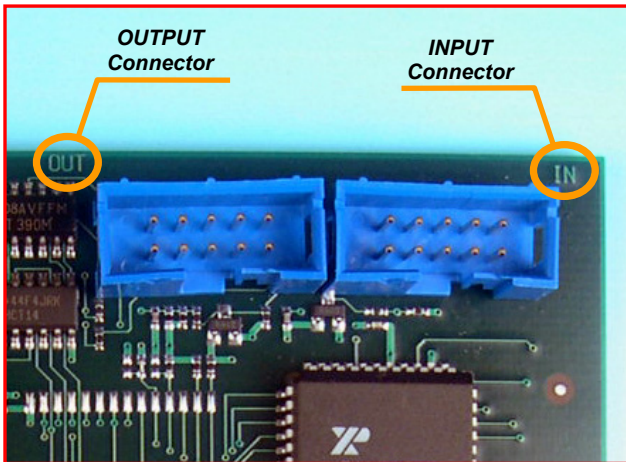


Fig. 1

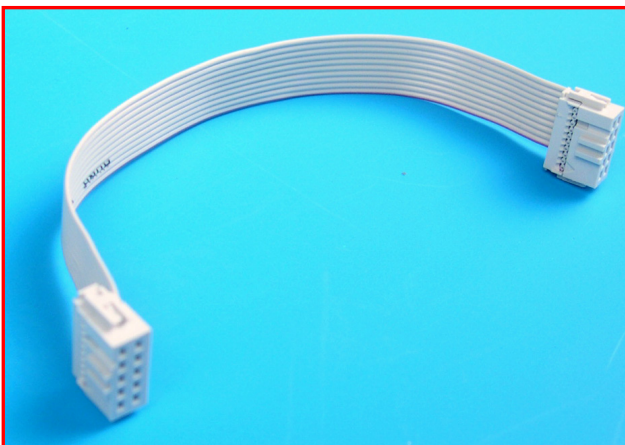


Fig. 2

4. CARD SETUP

The recognition of the card by Windows is performed automatically (see Fig. 3).



Fig. 3

When you press the “Next” key, the window shown below appears (Fig. 4). Click on “Search for a suitable driver for my device” and press “Next”.



Fig. 4

In case Windows does not automatically find the driver, insert in the PC the CD-Rom of one of the following programs: **Quick SPC**, **Easy Acquisition** or **Marposh Driver Library**. Click on the “*CD-ROM drives*” options, then press “*Next*”.

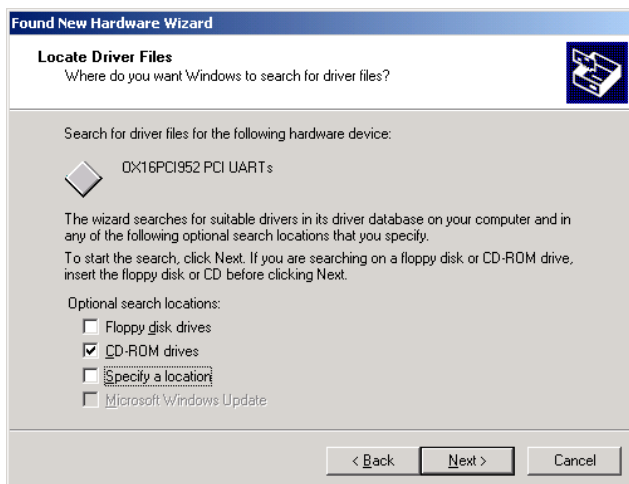


Fig. 5

As soon as the operating system has found the *pci* card driver, press “*Next*” (fig. 6).

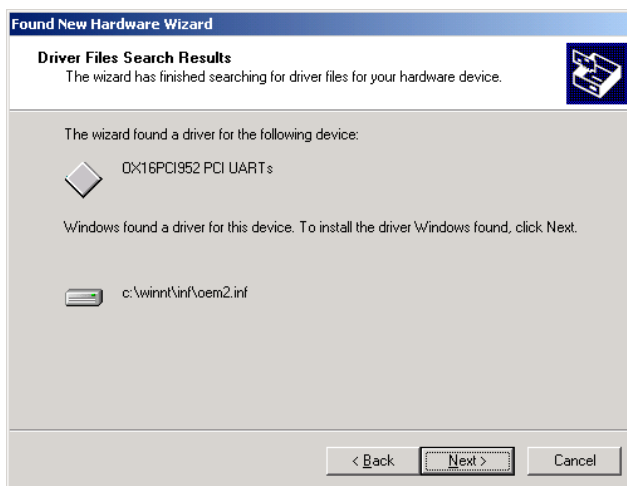


Fig. 6

If the “Windows Logo testing” message pops-up saying that the software is not compatible with the operating system (Fig. 7), press “Continue Anyway”.



Fig. 7

Press “Finish” to complete the installation (Fig. 8). If the operating system requests it, restart the computer.



Fig. 8

4.1. Checking the installation of the *pci* card

To check whether the card has been correctly installed, click the right-hand key of the mouse on “*My computer*”, in the Windows desktop. Click on “*System properties*” and select “*Hardware*”: the window shown below appears (Fig. 9).

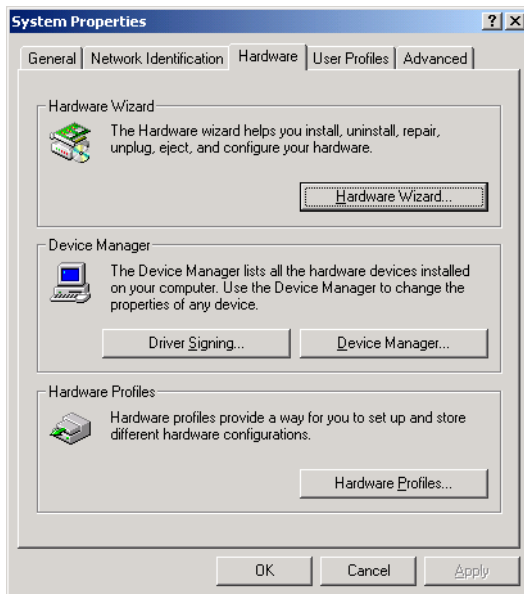


Fig. 9

When you click on the “*Device manager*” (or “*System*”) key, the following window appears (Fig. 10). Expanding the “*Ports (COM & LPT)*” item, the new pair of COMs installed with the **pci** card are included: Windows calls them “*PCI Communications Port*”.

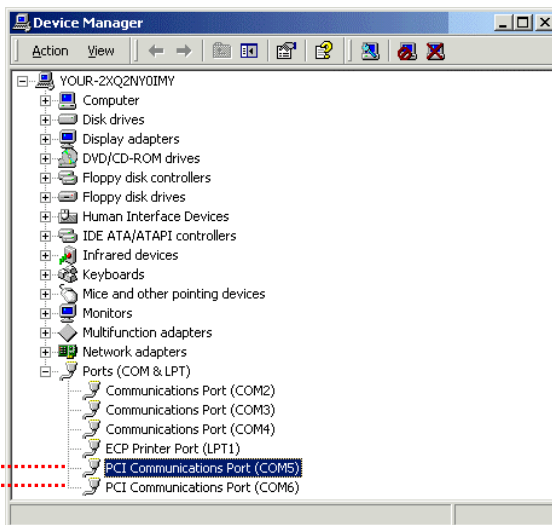


Fig. 10

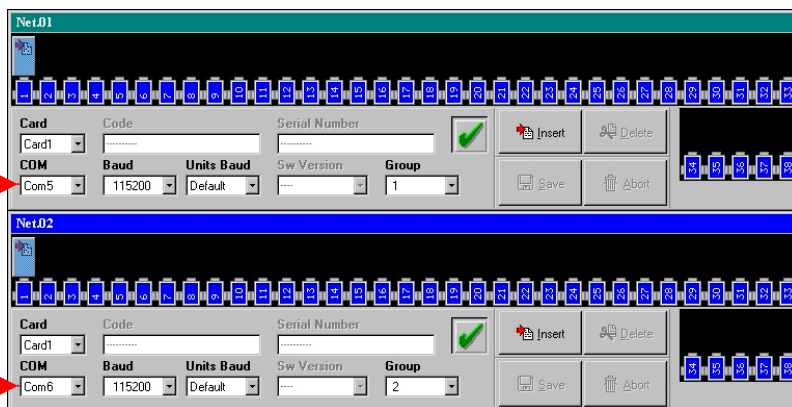
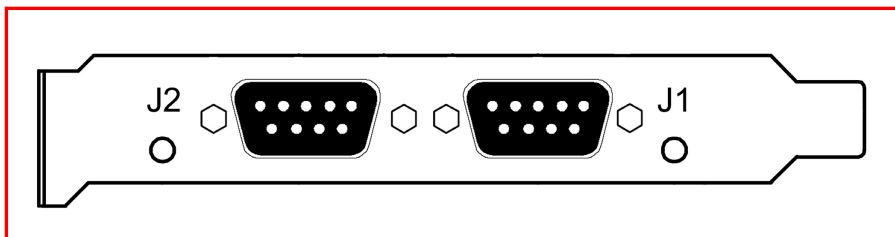


Fig. 11

The number of COMs assigned by the PC in the “*Device Manager*” window (COM5, COM6, etc.) is the same that must be entered in the “MDHQSPC” configuration software.

4.2. Connection of networks to cards



The connection of the networks is made by means of an RS-485 serial cable, directly to connectors “J1” and “J2”.

The cables come in the following lengths:

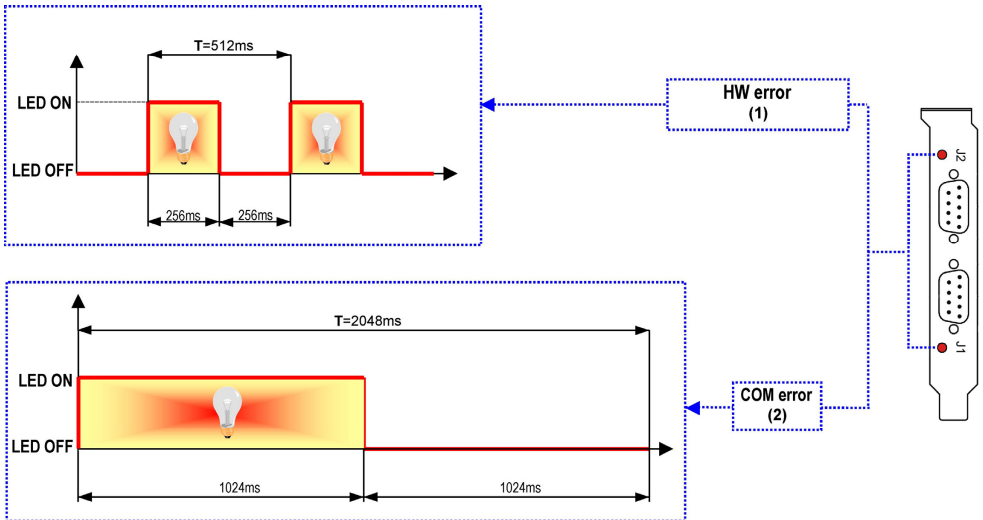
- 2mt code **6738057016**
- 10mt code **6738057023**
- 15mt code **6738057022**
- 25mt code **6738057017**

5. LED FOR DISPLAY OF UNIT OPERATING STATUS

The type of lighting of the red LED on the **pci** card panel indicates the operating status of the unit. There are the following flashing modes:

- “ON ERROR” *(the LED is activated only when an error is generated)*
- “AUTOMATIC” *(this mode includes both the ON ERROR warning and brief flashes to indicate the status of the card channels – par. 5.2).*

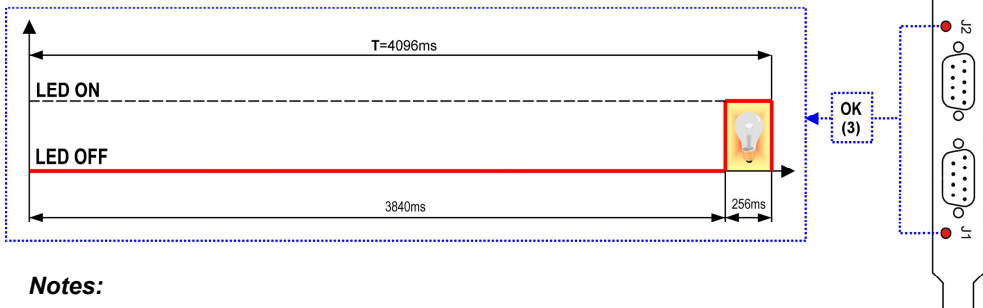
5.1. “ON ERROR” / “AUTOMATIC” mode



Notes:

- (1) HW ERROR → general hardware and bootstrap errors
- (2) COM ERROR → general serial driver and/or protocol error

5.2. “AUTOMATIC” mode



Notes:

- (3) OK → the network is in working order

6. CALCULATION OF ABSORPTION

To calculate the total absorption of the card and networks from the +5 V of the ISA slot, consider:

$$V_{\text{network}} = 7.5 \text{ Vdc}$$

$$P_{\text{card}} = 1.5 \text{ W}$$

$$K = 1.25 \text{ (efficiency of DC/DC converter)}$$

$$I_{\text{network}} = I_{\text{modules}} \times N_{\text{modules}}$$

$$P_{\text{network}} = V_{\text{network}} \times I_{\text{network}}$$

$$P_{\text{total absorbed}} = P_{\text{network}} \times K + P_{\text{card}}$$

E.g.: the example shown below is specific for a DigiCrown configuration with a maximum RS-485 cable length of 10 m.

$$N_{\text{modules}} = 31 + 31 = 62$$

$$I_{\text{modules}} = 0.04 \text{ A}$$

$$I_{\text{network}} = 62 \times 0.04 = 2.48 \text{ A}$$

$$P_{\text{network}} = 7.5 \times 2.48 = 18.6 \text{ W}$$

$$P_{\text{total absorbed}} = 18.6 \times 1.25 + 1.5 = 24.75 \text{ W}$$

7. GROUND CONNECTION

In this chapter are reported different technical solutions in order to make sure the *DigiCrown* system is properly grounded, according to the NET's configuration and to the lay-out of the different units.

The purpose of ground connection is to minimize as much as possible the electrical noise and the interference, typically affecting the measurement signal.

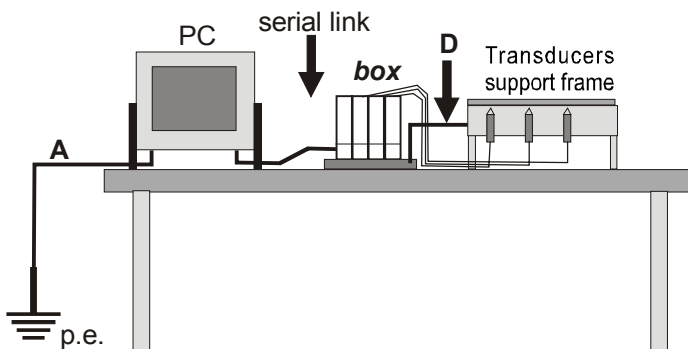
The ground connections schemes reported in this paragraph represent the optimal solution in order to have a system fully compatible with the EMC standards, according to the following directives:

- 73/23/EEC
- 2004/108/CE
- EN55022: 1998 (EMC)
- EN55024: 1998 (EMC)

If for a specific application the customer considers such technical solutions not required, Marposs is not responsible for any possible inaccurate working condition of the devices.

• **Bench application n. 1**

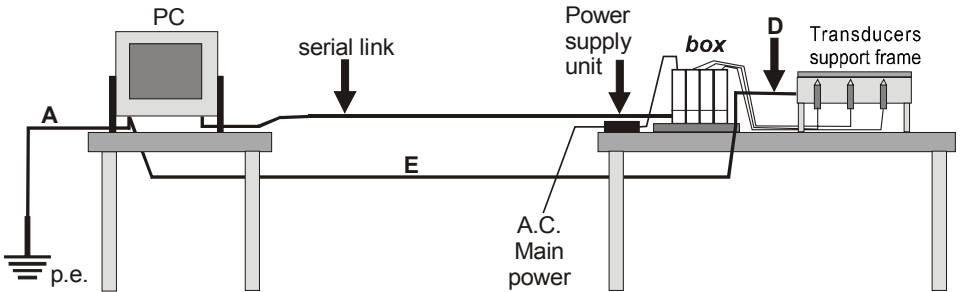
The whole *DigiCrown* system (control + measurement) has been placed on a single bench gauge.



The “D” equipotential connection between the **box** modules and the transducers support frame, can be done whether a metallic conductive frame is used. In the glass gauging applications the transducers support frame is usually not a conductive material and the transducers are typically insulated, in this case no ground connection is required.

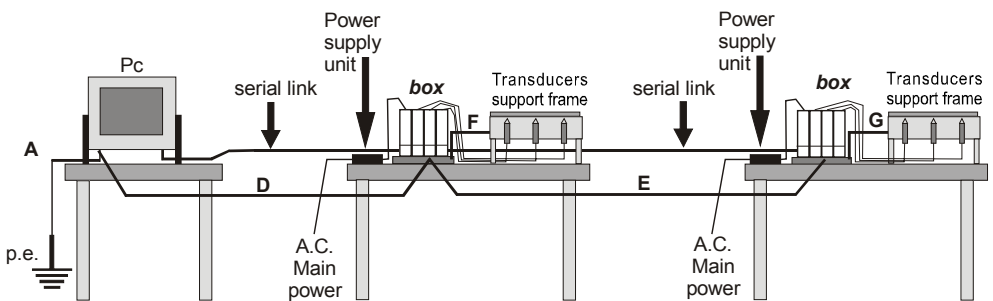
- **Bench application n. 2**

In case the control system (PC...) is placed on a bench while the transducers and the **box** modules on another, we suggest to set-up an equipotential link as shown in the points: **A + D + E**.



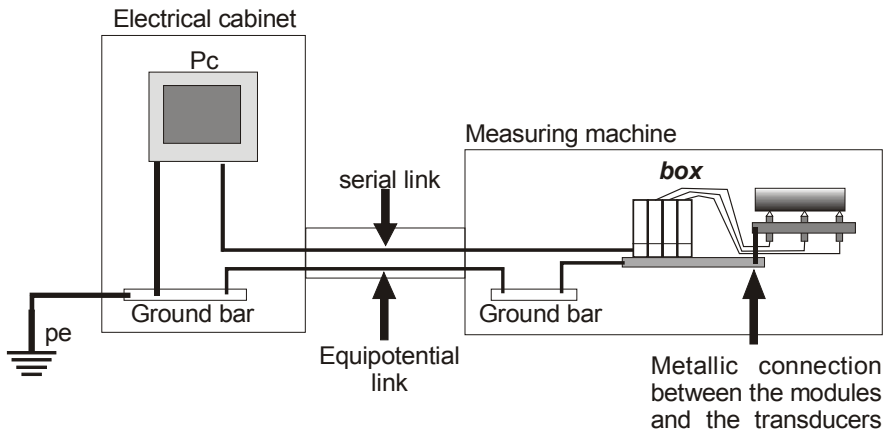
- **Bench application n. 3**

If the *DigiCrown* system is split on two or more benches, we suggest to set-up an equipotential link as shown in the points: **A + D + E + F + G**.



- **Automatic machine application**

For such applications it is strongly suggested to provide the **box** units and the transducers support frame with an equipotential link: in the automatic machine applications the eddy-currents normally flow in the transducer's shield.



8. TECHNICAL SPECIFICATIONS

DigiCrown pci (code 6355321000)

Power supply	from PCI bus standard 5 V
Power absorption (P) (*)	1.5 W + power towards network
Current absorption from +5V (I) ...	0,2A + current towards network
INPUT/OUTPUT	<i>DigiCrown</i> HW&protocol compatible
RS485 rate	prog. Baud 9600 or 208333
Operating temperature	standard PC
Maximum network length	up to 1 Km (according to the network config.)
Number of networks per card	2
Dimensions	standard short PCI slot
Absorbed power	see Chapter 6

(*) → Power required for management of configuration. Should the power supply unit integrated in the PC not be able to supply this power, a *DigiCrown psu+psc* module must be installed.

9. DECLARATION OF CONFORMITY

MARPOSS S.p.A. hereby declares that the devices described in this manual comply to the EMC electromagnetic compatibility requirements, in compliance with the following directives:

73/23/EEC of 02-19-1973 (LOW VOLTAGE directive)
2004/108/CE of 01-20-2005 (EMC directive)

The devices have been designed, assembled and tested in compliance with the following European standards:

EN55022 : 1998 (EMC)
EN55024 : 1998 (EMC)

10. ORDERING CODES

The tables below are a general summary of the ordering codes for all the components of the *DigiCrown Probing Line*.

The highlighted parts are the elements described in this manual.

INTERFACES

ORDER CODE	DESCRIPTION
767X000000	DIGI CROWN BOX
767X000200	DIGI CROWN BOX + RAM
767Y000000	DIGI CROWN 232
767Y010000	DIGI CROWN USB
767W000000	DIGI CROWN PSU (110-240Vac / 7,5Vdc)
767W010000	DIGI CROWN PSU (24Vdc / 7,5Vdc)
767I000000	DIGI CROWN I/O SINK
767I010000	DIGI CROWN I/O SOURCE
767I020000	DIGI CROWN I/O ONLY INPUT
6355321000	DIGI CROWN PCI
6355322000	DIGI CROWN ISA

EXTENSIONS

ORDER CODE	DESCRIPTION
6738057016	CONNECTION CABLE 2m
6738057023	CONNECTION CABLE 10m
6738057022	CONNECTION CABLE 15m
6738057017	CONNECTION CABLE 25m

ACCESSORIES

ORDER CODE	DESCRIPTION
6355200000	END LINE CONNECTOR
6872030010	DIGI CROWN BUS
6872030011	DIGI CROWN PSC
4147000013	EU PLUG
4147000014	USA PLUG
4147000015	UK PLUG
4147000016	EU CABLE
4147000017	USA CABLE

SW packages

ORDER CODE	DESCRIPTION
CM2Z22MA00	QSPC
CM2F22MA02	EASY ACQUISITION
CM2A12MA01	MARPOSS DRIVER LIBRARY

 2002/95/CE 2002/96/CE	The product and any part that can be mechanically separated from it must not be disposed of the environment and must not be disposed of as municipal or general waste (Law for national adoption of European directives 2002/95/EC and 2002/96/EC and others). The provisions of the law only apply to products identified as WEEE (waste electrical and electronic equipment) marked with the appropriate symbol and in any case put on the market after 13 August 2005. Once put out of use, the WEEE product may contain substances and parts that are harmful to human health and the environment and which must be subject to professional treatment for reuse, recycling or definitive disposal. Deliver the WEEE product to an authorised WEEE treatment centre, or contact the local organisation responsible or your nearest Marposs service centre for information. Illegal disposal of a WEEE product is a crime punishable by penalties.
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A complete and updated list of the addresses is available in the Marposs website: www.marposs.com - www.testar.com

D4340035GF - Edition 02/2006 – Specifications subject to changes.

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